N433 Clinical Concept Map

Admitting Diagnosis: Cystic fibrosis exacerbation

CC: coughing up blood

Age of client: 17 years, 4 months

Gender: Female

Weight in kgs: 58.8 kg

Allergies: NKDA

Cognitive Development stage: Identity vs role confusion

Psychosocial Developmental Stage: Formal operational

Date of admission: 6/6/2021

Admission history: The patient presents to the ED on 6/6/2021 with complaints of coughing up blood 1-2 times a day for the past week. One week ago, the pulmonology clinic saw the patient for the same symptoms and started on PO Prednisone and Bactrim. Her symptoms continued and became more frequent, and she also started to experience chest tightness and pressure. She has been using her albuterol inhaler with little relief. The patient is afebrile and denies N/V. She is being admitted for a 14-day course of IV antibiotics given her history of cystic fibrosis.

Previous medical history: Cystic fibrosis with gastrointestinal manifestations, childhood FTT, steatorrhea, pancreatic enzyme insufficiency, uncontrolled morning headache, constipation

Chronic medical issues: Cystic fibrosis with gastrointestinal manifestations, steatorrhea, pancreatic enzyme insufficiency, constipation

Prior hospitalizations: 10/1/2019- 10/6/2019: Cystic fibrosis exacerbation and costochondritis

Social needs: N/A

Pathophysiology:

Crnp Rn, C. T. D. M. (2020). *Davis Advantage for Pathophysiology: Introductory Concepts and Clinical Perspectives* (2nd ed.). F.A. Davis Company.

Cystic fibrosis is an inherited disease that disrupts the cystic fibrosis transmembrane conductance regulator protein (Crnp Rn, 2020). This protein helps regulate the balance of salt and water on surfaces such as the lungs (Cystic Fibrosis Foundation, 2016). Without the proper balance of salt and water, mucus will accumulate on the surfaces and become thick or sticky. Cystic fibrosis most commonly only affects the lungs and will cause wheezing, excess sputum production, and a productive cough. This disease can also affect the pancreas, causing abdominal pain, poor growth and weight gain, cirrhosis of the liver, and steatorrhea (Cystic Fibrosis Foundation, 2016). Because cystic fibrosis is a genetic disorder, it is screened for and diagnosed at birth. Chest x-rays can also help diagnose this disease to determine

the amount of mucus or free space within the airway. Cystic fibrosis does not have a cure, but many FDA-approved treatments are available to help control symptoms, such as oral pancreatic enzymes, bronchodilators, mucolytics to control secretions, and anti-inflammatory medications to help control long-term inflammation from the disease (Crnp Rn, 2020).

Labs: **All values will appropriately reflect client's age*

Gregory, G., & Andropoulos, D. (2012). Gregory's Pediatric Anesthesia (5th ed.). Blackwell Publishing Ltd.

	Normal range	6/6/2021	Reason for abnormal value
WBC	4.5-13.5	7.55	-
HGB	12.0-16.0 g/dL	14.1 g/dL	-
HCT	36-45%	40.8%	-
Absolute eosinophils	< 0.5	0.58	Elevated eosinophils can be caused by inflammation from chronic conditions such as cystic fibrosis. Also, as an inflammation response to infection. The patient has a positive sputum culture indicating an infection in the respiratory tract.

Chest X-Ray: 6/6/2021

Indication: complaints of hemoptysis, history of cystic fibrosis

Findings: no acute abnormalities including pleural effusion or pneumothorax

6/17/2021

Indication: persistent complaints of chest pain, history of cystic fibrosis

Findings: no acute abnormalities including pleural effusion or pneumothorax

Sputum culture: 6/7/2021

Indication: respiratory complaints including shortness of breath and hemoptysis, history of cystic fibrosis

Findings: mixed bacterial flora, polymorphonuclear leukocytes

Cystic fibrosis patients have an excess of mucus in their airways. Once bacteria is introduced to the respiratory system, it will continue to grow and thrive within the mucus. Due to the patient's history, she was pre-emptively started on broad spectrum antibiotics while waiting for cultures to result.

Medications:

Jones & Bartlett Learning. (2019). *2020 Nurse's Drug Handbook* (19th ed.). Jones & Bartlett Learning.

	Amitza	**Azulfidine**	**Creon**	**Miralax**	**Protonix**	**Trikafta**
Dosing	8cg PO daily	1000mg PO BID	180,000 units/ 3 tablets PO TID with meals	17g PO BID	40mg PO daily	150mg PO BID
Classification	Chloride channel activator	Salicylate-sulfonamide, anti-inflammatory	Pancreatic enzymes	Osmotic laxative	Proton pump inhibitor	Transmembrane conductance regulator
Indication	Chronic constipation	Stomach pain, diarrhea, constipation	Steatorrhea, pancreatic insufficiency	Constipation	Acid reflux, GERD	Cystic fibrosis
Nursing considerations	Assess bowel function and do not give medication if diarrhea occurring. Measure blood pressure first due to the risk of hypotension.	Assess bowel function prior to administration. Measure BUN, CBC, and creatinine prior to and during administration.	Allergy assessment. Ensure patient takes with high fat food for best absorption.	Mix this medication into a full glass of liquid such as juice or water. Assess bowel function prior to administration. Take only as directed and as needed to prevent chronic constipation related to use of laxatives.	Administer PO medications prior to meal. This medication is not intended for long term use. Monitor for gross hematuria.	Assess and monitor liver function prior and during treatment. Assess vision.

Active orders: Contact and droplet precautions- *due to risk of infection*

Q8 Assessment
Q8 Vitals
Regular Diet
Strict I/O
Maintain IV Access
CPT to all lobes – *to increase sputum elimination*

Physical exam:

General: Patient is alert and oriented x4. Patient appears stated age and is dressed in clothes from home and wearing glasses. Patient does not appear to be in any distress.

Integument: Skin is pale, warm, and dry. Skin is free of bruises, rashes, and wounds. Skin turgor is normal. No drains are present. A PICC line is present in the patients left arm. **Slight clubbing to the fingers is noted on both hands, related to poor lung function from cystic fibrosis.**

HEENT: Pupils are equal, round, and reactive to light. Patient presents with glasses. Eyes, ears, and nose are free of drainage. Oral mucosa is pink and appears moist. Dentition is normal.

Cardiovascular: S1 and S2 are present, no murmurs hear upon auscultation. Peripheral pulses are equal strength and quality, 3+ bilaterally. Capillary refill is less than 3 seconds on fingers and toes bilaterally. No edema is visualized or palpated on upper or lower extremities. Homans sign is negative.

Respiratory: Breath sounds are clear to auscultation bilaterally throughout. No accessory muscle use is noted. Patient denies painful breathing. Respiratory rate of 16. Dry, non-productive cough, related to ongoing cystic fibrosis exacerbation that is being controlled with medications to reduce sputum production.

Genitourinary: Patient is voiding freely with adequate amounts. Patient denies pain during urination.

Gastrointestinal: Patient is tolerating a regular diet. Bowel sounds are present and normoactive in all 4 quadrants. Abdomen is nondistended, nontender, and free of pain upon palpation.

Musculoskeletal: Patient ambulates independently without gait disturbances. Patient is not a fall risk. Hand grips and pedal push/pull are of normal strength and quality bilaterally.

Neurological: Patient shows good insight to disease process and understands plan of care. Normal thought process. Patient denies any numbness or tingling in fingers or toes bilaterally.

Vitals:

Time	Temperature	RR	HR	O2 Sat	BP	MAP
1508	98.6F Oral	16	110	97% room air	127/72	92

Pain scale:

Time	Type of scale	Rating	Interventions
1508	Numeric pain scale	0/10	No interventions needed.

Nursing Diagnosis: Swearingen, P. L., & Wright, J. (2018). *All-in-One Nursing Care Planning Resource: Medical-Surgical, Pediatric, Maternity, and Psychiatric-Mental Health* (5th ed.). Mosby.

Nursing Diagnosis 1 Impaired gas exchange related to cystic fibrosis as evidenced by clubbing of the fingers.	**Nursing Diagnosis 2:** Dysfunctional gastrointestinal motility related to cystic fibrosis as evidenced by frequent episodes of constipation, steatorrhea, and diarrhea.	**Nursing Diagnosis 3** Imbalanced nutrition: less than body requirements related to pancreatic enzyme efficiency as evidenced by steatorrhea.
Rationale This patient has experienced multiple cystic fibrosis exacerbations in her childhood, leading to poor gas exchange, causing a slight clubbing of her fingernails.	**Rationale** The client has recurring episodes of dysfunctional gastrointestinal motility. Some days she is constipated and requires a laxative, while other days, she is experiencing diarrhea and steatorrhea depending on medication use.	**Rationale** This patient requires an oral pancreatic enzyme supplement with every meal to increase absorption. Without this medication, she experiences steatorrhea which indicates that she is not absorbing her food.
Interventions **Intervention 1:** Assess respiratory status and vital signs per protocol. **Intervention 2:** Administer Trikafta per order to aid in water and salt balance to reduce mucus production.	**Interventions** **Intervention 1:** Increase fluid intake. **Intervention 2:** Administer pancreatic enzyme per order.	**Interventions** **Intervention 1:** Administer pancreatic enzyme per order. **Intervention 2:** Consume a diet with balanced protein, carbohydrates, and fat.
Evaluation of Interventions The patient had a regular respiratory assessment, and vitals remained stable throughout the day. The patient's cough was dry and non-productive.	**Evaluation of Interventions** The patient had an adequate oral intake and was given her pancreatic enzyme at mealtime. She denied constipation or episodes of diarrhea or steatorrhea.	**Evaluation of Interventions** The patient is tolerating her balanced diet and is taking the pancreatic enzyme appropriately. She did not experience any steatorrhea while in my care but complained of mild stomach cramping as if she had not taken her medication.

References

Cystic Fibrosis Foundation. (2016). *Basics of the CFTR Protein*. https://www.cff.org/Research/Research-Into-the-Disease/Restore-CFTR-Function/Basics-of-the-CFTR-Protein/

Gregory, G., & Andropoulos, D. (2012). Gregory's Pediatric Anesthesia (5th ed.). Blackwell Publishing Ltd.

Jones & Bartlett Learning. (2019). *2020 Nurse's Drug Handbook* (19th ed.). Jones & Bartlett Learning.

Medscape. (2021, June 11). *Trikafta (elexacaftor/tezacaftor/ivacaftor), indications, interactions, adverse effects, and more*. Medscape. https://reference.medscape.com/drug/trikafta-elexacaftor-tezacaftor-ivacaftor-4000016

Swearingen, P. L., & Wright, J. (2018). *All-in-One Nursing Care Planning Resource: Medical-Surgical, Pediatric, Maternity, and Psychiatric-Mental Health* (5th ed.). Mosby.